

TMH/DAG:lam 11/03/03
PATENTAttorney Reference Number 4239-61302
Application Number 10/017,372

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

²
~~1~~ (Currently amended) A functional TGF- β 1 ~~family~~-fusion protein, comprising:
a functionalizing peptide tag of no more than about 100 amino acids for detecting, quantifying, or providing a specific additional function to the fusion protein; and
a mature TGF- β 1 ~~family protein~~ comprising residues 279-283 and 296-408 of SEQ ID NO: 37, or an amino acid sequence that has at least 95% sequence identity with the ~~mature TGF- β family protein~~ residues 279-283 and 296-408 of SEQ ID NO: 37 and which retains TGF- β 1 ~~family protein~~ activity;
wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about ~~residue positions~~ 1 and 22 of the mature ~~portion of the~~ TGF- β 1 ~~family protein~~;
and wherein the activity of the TGF- β 1 fusion protein is reduced by no more than 50% as compared to the mature TGF- β 1 ~~family protein~~.

³
~~2~~ (Currently amended) A functional TGF- β 1 ~~family protein~~-dimer formed by the association of two of the fusion proteins of claim ~~1~~. ²

⁴
~~3~~ (Original) The dimer of claim ~~2~~, wherein the dimer is a homodimer. ³

⁵
~~4~~ (Currently amended) The dimer of claim ~~2~~, made by a process comprising:
expressing a nucleic acid molecule in a eukaryotic cell to produce a monomer fusion protein, wherein the nucleic acid molecule comprises:
a sequence encoding the functionalizing peptide tag;
a sequence encoding the mature TGF- β 1 ~~family protein~~; and
a sequence encoding a pro-region (latency associated peptide) of the TGF- β 1 ~~family protein~~, located to provide targeting and/or assembly and/or processing of the fusion protein encoded for by the nucleic acid. ³

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6 5
8. (Original) The dimer of claim 4, wherein the process further comprises:
associating two monomer fusion proteins to form the dimer.

7 5
8. (Currently amended) The dimer of claim 4, wherein the sequence encoding the
pro-region is located upstream to both the sequence encoding the functionalizing peptide tag and
the sequence encoding the mature TGF- β 1-family protein.

8 5
9. (Original) The dimer of claim 4, wherein the process further comprises:
cleaving the pro-region (latency associated peptide) from at least one fusion monomer.

9 5
9. (Original) The dimer of claim 4, wherein the process further comprises:
cleaving the pro-region (latency associated peptide) from both fusion monomers.

10 2
10. (Currently amended) The fusion protein of claim 4, wherein the functionalizing
peptide tag is inserted downstream of residue five of the mature TGF- β 1-family protein.

10. (Cancelled).

11
11. (Currently amended) The fusion protein of claim 4, where the protein
comprises the amino acid sequence as in the mature portion of SEQ ID NO: 37.

12-17. (Cancelled).

12 2
18. (Currently amended) The fusion protein of claim 4, further comprising a pro-
region (latency associated peptide) of the TGF- β 1-family protein located to provide targeting
and/or assembly and/or processing of the fusion protein.

13 12
19. (Original) The fusion protein of claim 18, wherein the pro-region is located at
the N-terminal region of the fusion protein.

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20-27. (Cancelled)

¹⁵
~~28.~~ (Previously presented) The fusion protein of claim ²~~1~~, wherein the tag is an epitope tag, a purification tag, or an identification tag.

¹⁶
~~29.~~ (Previously presented) The fusion protein of claim ²~~1~~, wherein the tag comprises a FLAG tag, a c-myc tag, a 6x His tag, a HA tag, a Tat tag, a T7 tag, a GFP peptide, or a GST peptide.

30. (Cancelled).

¹⁷
~~31.~~ (Currently amended) ~~The~~ An isolated nucleic acid molecule encoding the fusion protein of claim 301, comprising ~~a sequence comprising~~ residues 845-1234 of SEQ ID NO: 36.

¹⁸
~~32.~~ (Currently amended) The isolated nucleic acid molecule of claim ¹⁷~~30~~, further comprising a sequence encoding a TGF- β pro-region.

¹⁹
~~33.~~ (Currently amended) The isolated nucleic acid molecule of claim ¹⁸~~32~~, comprising ~~a sequence comprising~~ SEQ ID NO: 36.

²⁰
~~34.~~ (Currently amended) A recombinant nucleic acid molecule comprising a promoter sequence operably linked to the isolated nucleic acid molecule according to claim ~~30~~. ¹⁷

²¹
~~35.~~ (Currently amended) An isolated transgenic cell comprising a recombinant nucleic acid molecule according to claim ~~34~~. ²⁰

²²
~~36.~~ (Original) The transgenic cell of claim ²¹~~35~~, wherein the cell is a bacterial cell or an eukaryotic cell.

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²³
37. (Original) The eukaryotic cell of claim ²²36, wherein the cell is a yeast cell or a mammalian cell.

38-57. (Cancelled).

¹
58. (Currently amended) A TGF- β family fusion protein, comprising:
a N-terminal region consisting of an amino acid sequence of a pro-region (latency associated peptide) of a TGF- β 1-family protein,
a functionalizing peptide tag of no more than about 100 amino acids; and
an amino acid sequence consisting of the mature portion of the TGF- β 1-family protein;
wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about residues 1 and 22 of the mature portion of the TGF- β 1-family protein;
and wherein the portion of the fusion protein comprising the mature portion of the TGF- β 1-family protein and the functionalized peptide tag has a TGF- β 1-family protein activity that is reduced by no more than 50% as compared to the mature TGF- β 1-family protein alone.

²³
59. (New). An isolated nucleic acid molecule encoding the fusion protein of claim ²58, comprising residues 835-1197 of SEQ ID NO: 8, SEQ ID NO: 10, residues 835-1197 of SEQ ID NO: 12, SEQ ID NO: 14, residues 845-1222 of SEQ ID NO: 32, residues 849-1226 of SEQ ID NO: 34, or residues 845-1234 of SEQ ID NO: 38.

¹⁴
60. (New). An isolated nucleic acid molecule encoding the fusion protein of claim ¹²59, comprising SEQ ID NO: 8, 12, 32 or 38.

²⁴
61. (New) The fusion protein of claim ²58, where the protein comprises the amino acid sequence as in the mature portion of SEQ ID NO: 9, 11, 13, 15, 33 or 39.